US-PAT-NO: 5930009

DOCUMENT-IDENTIFIER: US 5930009 A

TITLE: System and method for
adjusting color

DATE-ISSUED: July 27, 1999

INVENTOR-INFORMATION:
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APPL-NO: 08/ 607267

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PARENT-CASE:

   This application is a continuation of
application Ser. No. 08/245,449,
filed May 18, 1994 now abandoned.

                        FOREIGN-APPL-PRIORITY-DATA:
 COUNTRY   APPL-NO
APPL-DATE
 JP   5-119955   May 21,
1993

US-CL-CURRENT: 358/518, 358/504 , 358/520 ,
358/527

ABSTRACT:

A color image system for adjusting colors of inputted images includes a color adjusting unit and color display unit. The color display unit simultaneously displays the original image, the adjusted image, and color information for both the original image and adjusted image. A color adjustment matrix is created by the color adjusting unit based upon color directions inputted to the color display unit with respect to the color information of the original color image. The color adjustment matrix is used to directly adjust the original image without converting the image to a second color space.

19 Claims, 30 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 24

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Detailed Description Text - DETX (20):
    Namely, if once the set up **matrix** has been produced, even when **parameters,** such as luminance, chroma, **hue,** based on different color spaces are input from the image display unit 5, it is possible to produce the adjusted pixel directly by performing a calculation using the set up **matrix,** for the values of the original pixel in RGB space. It is not needed to have the conventional process of converting data of the original pixel in the RGB space into data in color

spaces of luminance, chroma, hue and adjusting the
luminance, chroma, hue of
the converted data, then putting the adjusted data
of the luminance, chroma,
hue back into the RGB space. Thus, on account of
producing the set up matrix,
this embodiment has an advantage that it is
possible to produce a new adjusted
pixel with using its own color space by only
performing the matrix calculation,
even **parameters** based on different color spaces are
specified for adjusting the
image.

Detailed Description Text - DETX (107):
   Step 2: The above **matrix** is changed by using the
hue parameter.

Detailed Description Text - DETX (108):
   In the case of the value of the **hue parameter**
Cr, Cg, Cb or Cy, Cm, Cc being
positive, the **matrix** is:

Detailed Description Text - DETX (110):
   In the case of the value the **hue parameter** Cr,
Cg, Cb or Cy, Cm, Cc being
negative, the **matrix**

Detailed Description Text - DETX (113):
   When both positive and negative values exist in
the **hue parameter** Cr, Cg, Cb
or Cy, Cm, Cc, the **matrix** is changed depending upon
the above two examples.
For instance, the case of the hue **parameter** of red
being positive, the hue
parameter of green being negative, and that of blue

being positive at the
calculation for the primary color becomes as
follows. Formula 8 is applied for
the hue **parameter** of red, Formula 10 is for the hue
parameter of green, and
Formula 8 for the hue **parameter** of blue. ##EQU27##

Detailed Description Text - DETX (145):
   As described above, when the **parameters** of the
luminance, chroma and **hue** are
changed simultaneously, it is possible to produce
one set up **matrix**. The
procedure of the foregoing steps 1 to 5 for
producing the set up matrix
includes a method of calculating the complicated
matrix calculation
efficiently. Accordingly, it is not always
necessary to perform the all steps
1 to 5. Other orders of the steps and other
methods of producing the set up
matrix are acceptable.